




SPECIFICATION SHEET NO.	S0427- SM24QC0000SC24	
ORIGINAL MFG/PART NO.	MDD Diodes/SM24QC/SOT23SM24QSC24	
NEXTGEN PART CODE	SM24QC0000SC24	Indicate This Code For RFQ /Order
DATE	Apr. 27, 2025	
REVISION	A3	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	<p>SMD Plastic-Encapsulate CAN bus ESD Protection Diodes, Dual Line, SM Series Case SOT-23, 3 Pads, Uni-Directional Type Reverse Working Voltage (VRWM): 24V Clamping Voltage (VC): 36VC Max.@1.0A Operating Temperature Range (TOPT) -55°C ~+150°C Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)</p>	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE
<div> <div>Issued/Checked/Approved</div> <div>    </div> </div>
Effective Date: Apr. 27, 2025

CUSTOMER APPROVE
Date:

DESCRIPTION

The SM24QC has been designed to protect the CAN transceiver in high-speed and fault tolerant networks from ESD and other harmful transient voltage events.

This device provides bidirectional protection for each data line with a single compact SOT-23, giving the system designer a low-cost option for improving system reliability and meeting stringent EMI requirements.

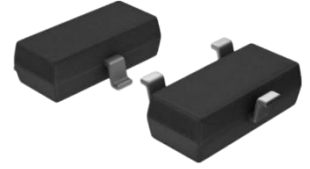


Image shown is a representation only. Exact specifications should be obtained from the product dimension.

MAIN FEATURE

- 200 Watts Peak Pulse Power per (8/20μs)
- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 3A (8/20μs)
- Dual Line CAN bus protection Diode
- Low Clamping Voltage
- Low leakage current
- Working voltages: 24V
- Meet MSL 1 Requirement
- Cross Competitors Parts and More.
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)



APPLICATION

- Device Net
- Low and High-Speed CAN
- Smart Distribution Systems (SDS)
- Controlled Area Network – CAN 2.1 / CAN FD

ELECTRICAL CHARACTERISTICS

- See Page 5 ~Page 6.
- All Parameters are Subject To NextGen Components' Final Confirmation

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code SM24QC0000SC24 For RFQ and Order.

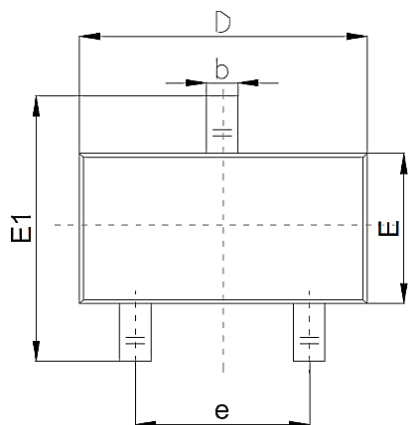
PART CODE GUIDE

RFQ
[Request For Quotation](#)

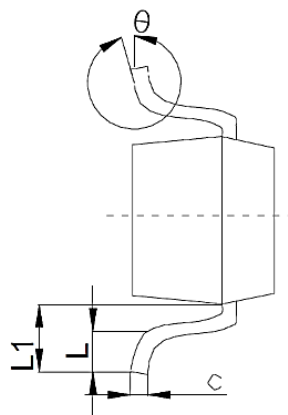
CODE	NAME	KEY SPECIFICATION OPTION
SM	Product Series Code	SMD Plastic-Encapsulate CAN bus ESD Protection Diodes, Dual Line, SM Series, Case SOT-23, 3 Pads, Uni-Directional Type
24QC	Parameters Code	Letter or Digits (A~Z, a~z or 0~9)
0000S	Internal Control Code	Letter or Digits (A~Z, a~z or 0~9)
C24	Marking Code	Marking "C24"
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 0~9) for Special Parametric Blank: N/A

DIMENSION- Unit: mm, Case SOT-23 Outline

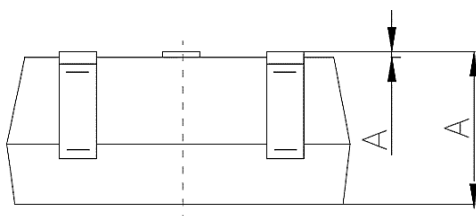
Top View



Side View



Side View

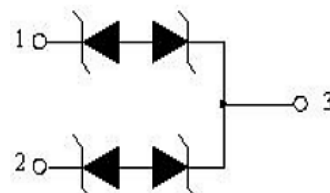
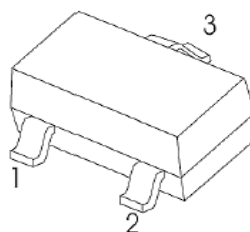
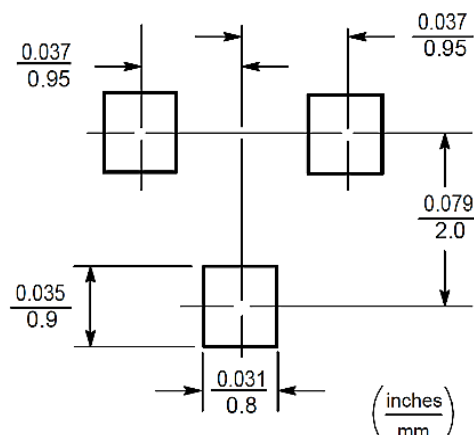


SYMBOL	DIMENSION (MM)		
	MIN.	TYP.	MAX.
A	0.65		1.40
A1	0.00		0.20
b	0.30		0.55
c	0.08		0.20
D	2.70		3.10
E	1.15		1.65
E1	2.10		2.80
e	1.70		2.10
L	0.15		0.50
L1	0.35		0.70
θ	0°		12°

Recommend Pad Layout - Tolerance: $\pm 0.05\text{mm}$

Pin Configuration

Circuit Diagram



MECHANICAL CHARACTERISTICS

CASE	FLAMMABILITY RATING	TERMINALS	MARKING
JEDEC SOT-23 molded plastic body	UL 94V-0	Matte tin plated, High temperature soldering guaranteed: 260°C/10s	C24

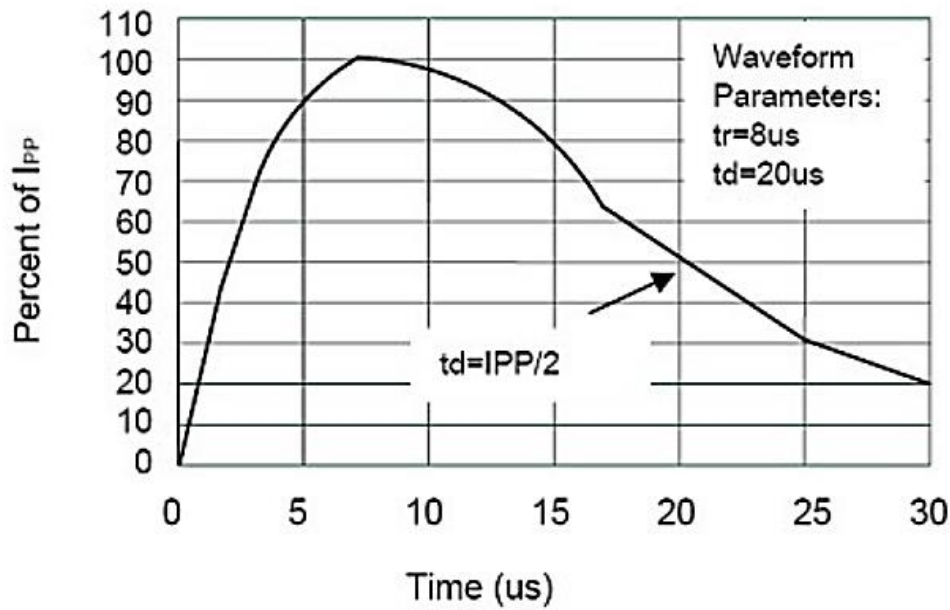
ABSOLUTE MAX. RATING & CHARACTERISTICS - $T_A=25^\circ\text{C}$ unless otherwise specified, For Reference Only

PARAMETER	SYMBOLS	VALUE	UNITS
ESD per IEC 61000-4-2 (Air)	VESD	± 30	KV
ESD per IEC 61000-4-2 (Contact)	VESD	± 20	KV
Peak Pulse Power ($t_p=8/20\mu\text{s}$ waveform)	PPP	200	W
Operating Temperature Range	TOPT	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	TSTG	$-55 \sim +150$	$^\circ\text{C}$
Lead Solder Temperature- Max. (10s Duration)	TL	260 /10s	$^\circ\text{C}$

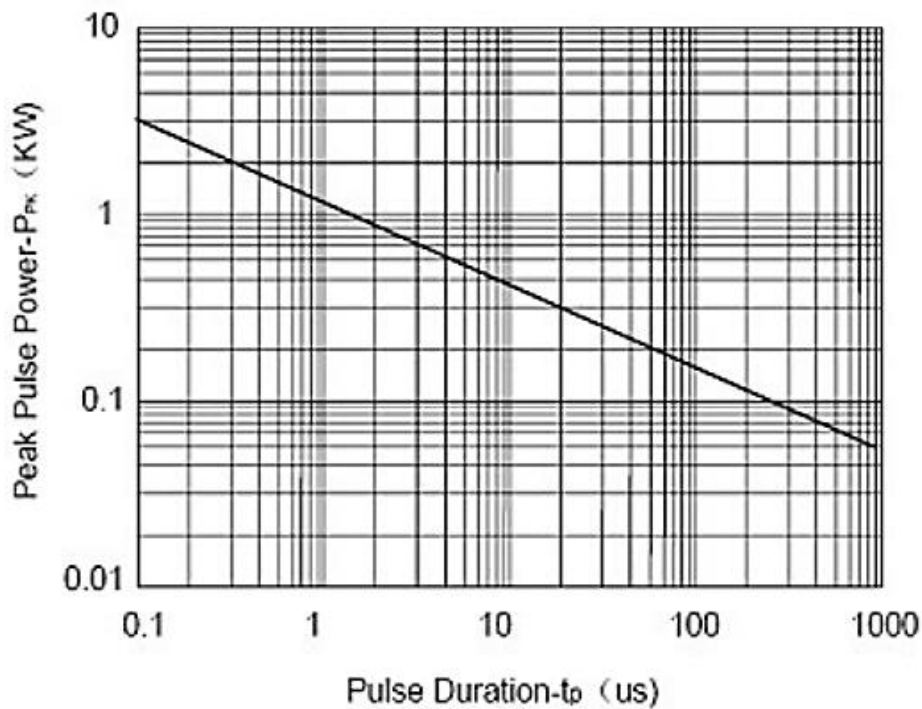
ELECTRICAL CHARACTERISTICS - TA=25°C unless otherwise specified, For Reference Only

PARAMETER	TEST CONDITION	SYMBOLS	VALUE			UNITS
			MIN.	TYP.	MAX.	
Reverse Working Voltage	Pin 1,2,to Pin3	VRWM	-	-	24	V
Reverse Breakdown Voltage	IT = 1mA, Pin 1, 2,to Pin3	VBR	26	-	32	V
Reverse Leakage Current	VRWM = 24V, Pin 1,2,to Pin3	IR	-	-	1.0	μA
Clamping Voltage	IPP = 1A, tp = 8/20μs, Pin 1,2,to Pin3	VC	-	-	36	V
	IPP = 3A, tp = 8/20μs, Pin 1,2,to Pin3		-	-	50	V
Junction Capacitance	VR = 0V, f = 1MHz, Pin 1,2,to Pin3	CJ	-	13	17	pF

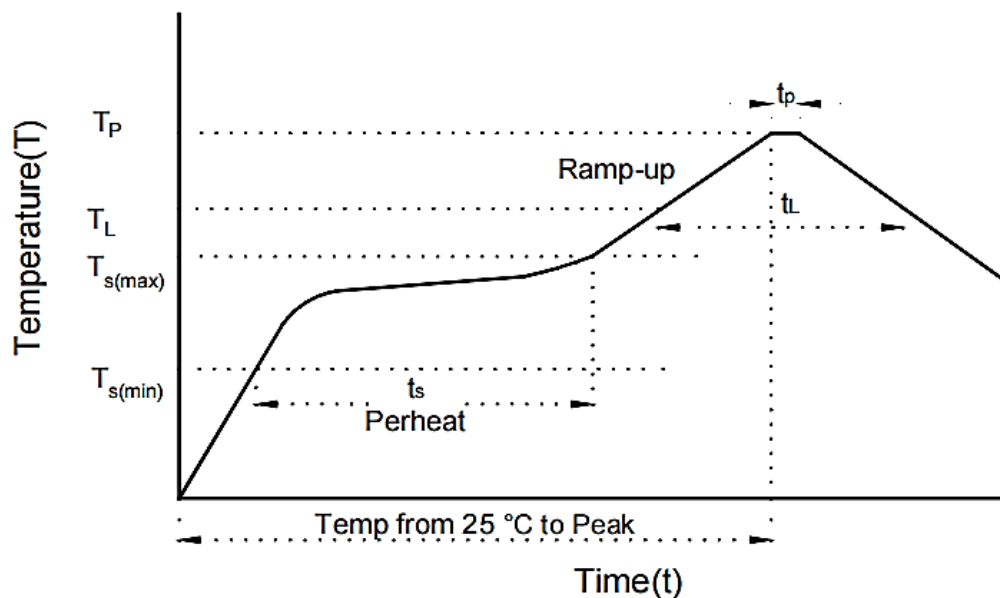
RATINGS AND CHARACTERISTICS CURVES- For Reference Only, Ta=25°C Unless Otherwise Specified.



Pulse Waveform

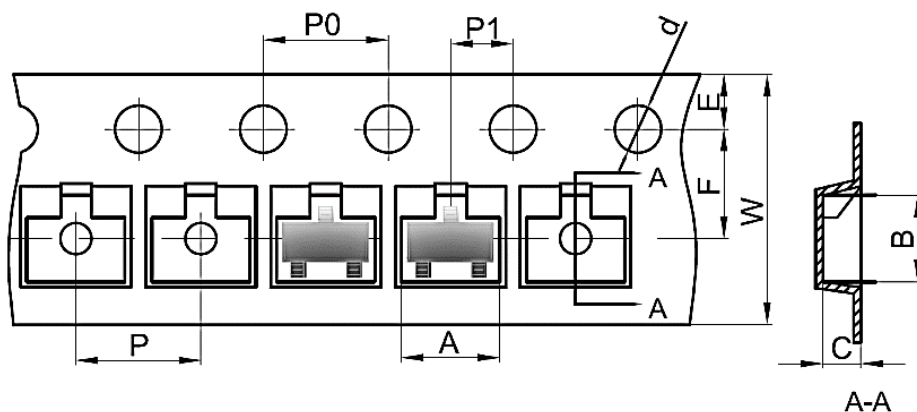


Non-Repetitive Peak Pulse Power vs. Pulse Time

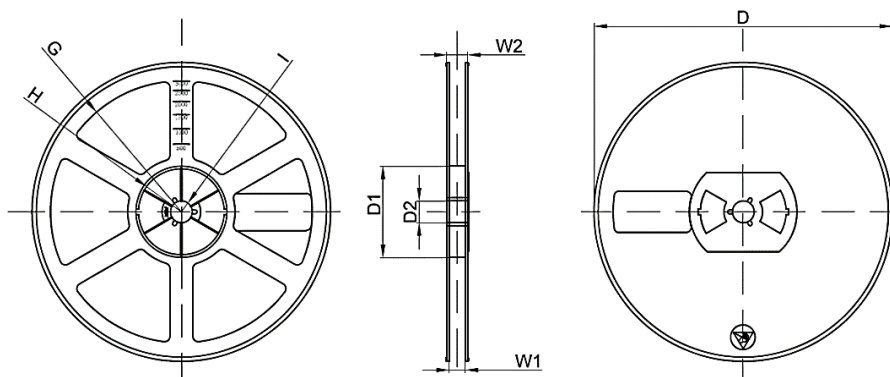
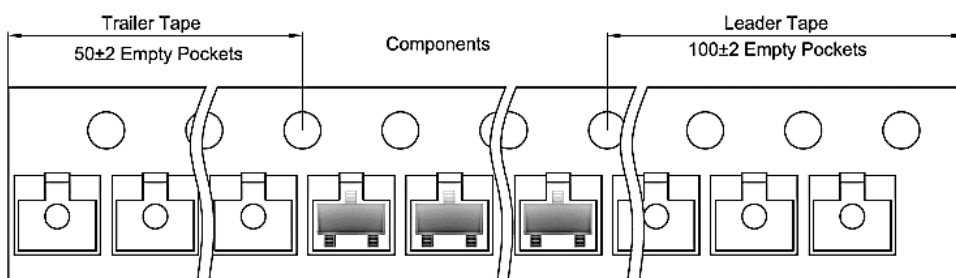
RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY


PROFILE FEATURE		PB-FREE ASSEMBLY
Average Ramp-up Rate (T_L Max to T_p)		3°C/second Max
Preheat	Temperature Min (T_s Min.)	150°C
	Temperature Max (T_s Max.)	200°C
	Time (t_s Min. to t_s Max.)	60 ~ 180 seconds
Time maintained above	Temperature (T_L)	217°C
	Time (t_L)	60 ~ 150 seconds
Peak/Classification Temperature (T_p)		260 °C
Time within 5°C of actual Peak Temperature (t_p)		10 seconds Max.
Ramp-down Rate		6 °C /Second Max.
Time 25 °C to Peak Temperature		8 Minutes Max.
Suggest reflow times		3 Times Max.

TAPE/REEL - Unit: mm, All Devices are packed in accordance with EIA standard RS-481-A and specifications



Case	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.5	1.75	3.5	4.0	4.0	2.0	8.0



Reel Size	D	D1	D2	G	H	I	W1	W2	Qty. (pcs)
7"	Ø178	54.4	13.0	R78.0	R25.6	R6.5	9.5	12.3	3000

IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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